LISTING OF THE CLAIMS

This Listing of Claims is being provided as a convenience to the Examiner; no amendments are being made.

Listing of Claims:

1. (Previously Presented) A radio frequency (RF) multi-antenna access point enhancement circuit comprising:

a multi-antenna signal processing circuit configured to be situated in a first access point and adapted to:

operate with a first baseband processor, so that the first baseband processor handles data transmissions in a first mode between the first access point and a second access point under a first channel transmission condition, without multi-antenna signal processing by the multi-antenna signal processing circuit, and the multi-antenna signal processor handles data transmissions in a second mode between the first access point and the second access point under a second channel transmission condition;

receive M independent RF modulated input signals from the second access point when the second channel transmission mode exists between the first access point and the second access point; and

process the M independent RF modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point; wherein the multi-antenna signal processing circuit operates selectively with the first baseband processor to demodulate RF signals received in a channel from the second access point.

2. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is enabled and selectively operates in the second mode when channel conditions indicate that a data rate in said channel has fallen below a predetermined threshold.

3. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is enabled and selectively operates in the second mode in response to a determination that a data rate in the channel is to be enhanced above a nominal operating rate.

4. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is enabled and selectively operates in the second mode in response to a determination that frequency selective fading is present in the channel.

5. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is further adapted to monitor channel transmission conditions.

6. (Previously Presented) The circuit of claim 1, wherein the first baseband processor is compatible with an 802.11x communications protocol.

7. (Previously Presented) The circuit of claim 1, wherein a processing latency of the multi-antenna signal processing circuit is compensated using a dummy data response to maintain compatibility with a transmission protocol used by the first access point and the second access point.

8. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is configured as a multiple-in, multiple out (MIMO) processor.

9. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is configured to a data stream transmitted using multiple independent antennas which each transmit a portion of the data stream.

10. (Previously Presented) An 802.11x compatible radio frequency (RF) multi-antenna access point enhancement circuit comprising:

a multi-antenna signal processing circuit configured to be situated in a first access point and adapted to:

operate with a first baseband processor, so that the first baseband processor handles data transmissions in a first mode between the first access point, in accordance with an 802.11x protocol, and a second access point under a first channel transmission condition, without multi-antenna signal processing by the multi-antenna signal processing circuit, and the multi-antenna signal processor handles data transmissions in a second mode between the first access point and the second access point in accordance with an 802.11x protocol under a second channel transmission condition;

receive M independent RF modulated input signals from the second access point when the second channel transmission mode exists between the first access point and the second access point;

process the M independent RF modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point;

transmit an RF modulated signal to the second access point using a point coordination function (PCF) mode associated with the 802.11x protocol so as to maintain timing compatibility; wherein the multi-antenna signal processing circuit is configured to operate with a first baseband processor to receive and transmit RF signals in a channel between the first access point and the second access point.

11. (Previously Presented) The circuit of claim 10, wherein the multi-antenna signal processing circuit is configured to process data using a high rate direct sequence spread spectrum (HR/DSSS) physical layer frame structure that has a preamble and header compatible with the 802.11x protocol.

12. (Previously Presented) The circuit of claim 11, wherein the header includes additional data to identify a high rate mode.

13. (Previously Presented) The circuit of claim 11, wherein the header includes additional data to identify a modulation format.

14. (Previously Presented) The circuit of claim 10, wherein the first baseband processor is configured to send multicast transmissions to a first set of targets within a first range of the first access point, and the multi-antenna signal processing circuit is configured to send multicast transmissions to a second set of targets within a second range of the first access point.

15. (Previously Presented) The circuit of claim 10, wherein the first baseband processor is configured to communicate with a first set of targets during a first access period, and the multi-antenna signal processing circuit is configured to communicate with a second set of targets during a second access period.

16. (Previously Presented) The circuit of claim 15, wherein the first access period and the second access period are alternated at a predetermined ratio.

17. (Previously Presented) The circuit of claim 10, wherein the multi-antenna signal processing circuit uses a wave beam transmission to communicate selectively to a target in a specific location, and not to other targets.

18. (Previously Presented) The circuit of claim 10, wherein the multi-antenna signal processing circuit is incorporated as part of a closed circuit television monitoring system, and the M independent signals are transmitted by N individual cameras.

19. (Previously Presented) The circuit of claim 10, wherein a receive sensitivity of the first access is adapted to be improved by selectively adding additional multi-antenna signal processing circuit modules for a data transmission and/or increasing M.

20. (Previously Presented) A radio frequency (RF) multi-antenna access point circuit comprising:

a baseband processor circuit adapted to handle data transmissions during a first operating mode in a channel between a first access point and a second access point;

a multi-antenna signal processing circuit for handling data transmissions during a second operating mode in the channel, the multi-antenna signal processing circuit being further adapted to:

receive M independent RF modulated input signals from the second access point; and

process the M independent RF modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point; wherein the first operating mode and the second operating mode are automatically selected by the RF multi-antenna access point system based on a transmission condition in the channel;

a modulator/demodulator circuit coupled to an antenna assembly and the multi-antenna signal processing circuit and baseband processor circuit for extracting I/Q data samples from an RF modulated received signal; and

a media access controller coupled to the multi-antenna signal processing circuit and baseband processor circuit for interfacing to a host computing system, wherein

the baseband processor is adapted to operate with the multi-antenna signal processing circuit, and wherein the baseband processor is configured to handle data transmissions during the first operating mode without multi-antenna signal processing by the multi-antenna signal processing circuit.

21. (Previously Presented) An apparatus comprising:

a multi-antenna signal processing circuit;

a first baseband processor configured to operate with the multi-antenna signal processing circuit, the first baseband processor configured to handle data transmissions in a first mode; and

the multi-antenna signal processor configured to handle data transmissions in a second mode,

wherein the baseband processor is configured to handle data transmissions during the first mode without multi-antenna signal processing by the multi-antenna signal processing circuit.

22. (Previously Presented) An apparatus according to claim 21, further comprising:

a first access point, including the multi-antenna signal processing circuit and the first baseband processor, configured to transmit or receive data in the first mode or the second mode, or combinations thereof;

a second access point configured to transmit or receive data in the first mode or the second mode, or combinations thereof;

the first baseband processor further configured to handle data transmissions in the first mode between the first access point and the second access point under a first channel transmission condition; and

the multi-antenna signal processor further configured to handle data transmissions in the second mode between the first access point and the second access point under a second channel transmission condition.

23. (Previously Presented) An apparatus according to claim 22, wherein the multi-antenna signal processor is further configured to receive M independent modulated input signals from the second access point if the second channel transmission condition exists between the first access point and the second access point.

24. (Previously Presented) An apparatus according to claim 23, wherein the multi-antenna signal processor is further configured to process the M independent modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point.

25. (Previously Presented) An apparatus according to claim 21, wherein the multi-antenna signal processor is further configured to operate selectively with the first baseband processor to demodulate signals received in a channel from an access point not collocated with the multi-antenna signal processor.

26. (Previously Presented) An apparatus according to claim 21, wherein the multi-antenna signal processor is compatible with an IEEE 802.11 type standard.

27. (Previously Presented) An apparatus according to claim 22, wherein the first baseband processor is further configured to handle data transmissions in the first mode between the first and second access points in accordance with an IEEE 802.11 type protocol, and the multi-antenna signal processor is configured to handle data transmissions in the second mode between the first access point and the second access point in accordance with an IEEE 802.11 type protocol.

28. (Previously Presented) An apparatus according to claim 22, wherein the multi-antenna signal processor is further configured to transmit an RF modulated signal to the second access point using a point coordination function (PCF) mode associated with an IEEE 802.11 type protocol.

29. (Previously Presented) An apparatus according to claim 21, wherein the multi-antenna signal processor is configured to operate with the baseband processor to receive or transmit signals in a channel between a first access point and a second access point.

30. (Previously Presented) A multi-antenna access point circuit comprising:

a baseband processor circuit configured to handle data transmissions during a first operating mode in a channel between a first access point and a second access point; and

a multi-antenna signal processing circuit configured to handle data transmissions during a second operating mode in the channel, wherein

the baseband processor is configured to operate with the multi-antenna signal processing circuit, and wherein the baseband processor is configured to handle data transmissions during the first operating mode without multi-antenna signal processing by the multi-antenna signal processing circuit.

31. (Previously Presented) A multi-antenna access point circuit of claim 30, wherein the multi-antenna signal processing circuit is configured to receive M independent modulated input signals from the second access point.

32. (Previously Presented) A multi-antenna access point circuit of claim 30, wherein the multi-antenna signal processing circuit is configured to process the M independent modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point.

33. (Previously Presented) A multi-antenna access point circuit of claim 30, wherein the first operating mode or the second operating mode is selected by the multi-antenna access point circuit.

34. (Previously Presented) A communication system comprising:

a multi-antenna signal processor;

a first baseband processor capable of operating with the multi-antenna signal processor, the first baseband processor configured to handle data transmissions in a first mode; and

the multi-antenna signal processor configured to handle data transmissions in a second mode,

wherein the first baseband processor is configured to handle data transmissions during the first mode without multi-antenna signal processing by the multi-antenna signal processing circuit.

35. (Previously Presented) A communication system according to claim 34, further comprising:

a mobile terminal configured to transmit data to a first and/or second access point;

the first access point, including the multi-antenna signal processor and the first baseband processor, configured to transmit or receive data in the first and/or second mode;

the second access point configured to transmit or receive data in the first and/or second mode;

the first baseband processor further configured to handle data transmissions in the first mode between the first access point and the second access point under a first channel transmission condition; and

the multi-antenna signal processor further configured to handle data transmissions in the second mode between the first access point and the second access point under a second channel transmission condition.

36. (Previously Presented) A communication system according to claim 35, wherein the multi-antenna signal processor is further configured to receive M independent modulated input signals from the second access point when the second channel transmission condition exists between the first access point and the second-access point.

37. (Previously Presented) A communication system according to claim 35, wherein the multi-antenna signal processor is further configured to process the M independent modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point.

38. (Previously Presented) A communication system according to claim 35, wherein the multi-antenna signal processor is further configured to operate selectively with the first baseband processor to demodulate signals received in a channel from the second access point.

39. (Previously Presented) A communication system according to claim 35, wherein the multi-antenna signal processor is 802.11x compatible.

40. (Previously Presented) A communication system according to claim 35, wherein the first baseband processor is further configured to handle data transmissions in the first mode between the first and second access points in accordance with an 802.11x protocol, and the multi-antenna signal processor is configured to handle data transmissions in the second mode between said first access point and said second access point in accordance with an 802.11x protocol.

41. (Previously Presented) A communication system according to claim 35, wherein the multi-antenna signal processor is further configured to transmit an RF modulated signal to the

second access point using a point coordination function (PCF) mode associated with an 802.11x protocol.

42. (Previously Presented) A communication system according to claim 34, wherein the multi-antenna signal processor is configured to operate with the first baseband processor to receive and transmit RF signals in a channel between a first access point and a second access point.

43. (Previously Presented) A communication system comprising:

a media access controller;

a baseband processor circuit coupled to said media access controller, said baseband processor being configured to handle data transmissions during a first operating mode in a channel between a first access point and a second access point; and

a multi-antenna signal processing circuit configured to handle data transmissions during a second operating mode in said channel, wherein

the baseband processor circuit is configured to operate with the multi-antenna signal processing circuit, and wherein the baseband processor circuit is configured to handle data transmissions during the first operating mode without multi-antenna signal processing by the multi-antenna signal processing circuit.

44. (Previously Presented) A communication system according to claim 43, wherein the multi-antenna signal processing circuit is configured to receive M independent modulated input signals from the second access point.

45. (Previously Presented) A communication system according to claim 43, wherein the multi-antenna signal processing circuit is configured to process the M independent modulated input signals using a channel mixing matrix to extract N independent data signals transmitted by the second access point.

46. (Previously Presented) A communication system according to claim 43, wherein the first operating mode or the second operating mode is selectable by the multi-antenna signal processing circuit.

47. (Previously Presented) A communication system according to claim 43, wherein the baseband processing circuit is configured to operate in parallel with the multi-antenna signal processing circuit.

48. (Previously Presented) A communication system according to claim 43, wherein the baseband processing circuit is configured to handle data transmissions in the first operating mode using a single antenna.

49. (Previously Presented) The circuit of claim 1, wherein the multi-antenna signal processing circuit is further adapted to operate in parallel with the first baseband processor.

50. (Previously Presented) The circuit of claim 1, wherein the first baseband processor is configured to handle data transmissions in the first mode using a single antenna.

51. (Previously Presented) The circuit of claim 10, wherein the multi-antenna signal processing circuit is further adapted to operate in parallel with the first baseband processor.

52. (Previously Presented) The circuit of claim 10, wherein the first baseband processor is configured to handle data transmissions in the first mode using a single antenna.

53. (Previously Presented) The circuit of claim 20, wherein the baseband processor circuit is configured to operate in parallel with the multi-antenna signal processing circuit.

54. (Previously Presented) The circuit of claim 20, wherein the baseband processor circuit is configured to handle data transmissions in the first operating mode using a single antenna.

55. (Previously Presented) The apparatus according to claim 21, wherein the multi-antenna signal processing circuit is further configured to operate in parallel with the first baseband processor.

56. (Previously Presented) The apparatus according to claim 21, wherein the first baseband processor is configured to handle data transmissions in the first mode using a single antenna.

57. (Previously Presented) The multi-antenna access point circuit according to claim 30, wherein the multi-antenna signal processing circuit is further configured to operate in parallel with the baseband processor.

58. (Previously Presented) The multi-antenna access point circuit according to claim 30, wherein the baseband processor is configured to handle data transmissions in the first operating mode using a single antenna.

59. (Previously Presented) The communication system according to claim 34, wherein the multi-antenna signal processor is further configured to operate in parallel with the first baseband processor.

60. (Previously Presented) The communication system according to claim 34, wherein the first baseband processor is configured to handle data transmissions in the first mode using a single antenna.

61. (Previously Presented) The communication system according to claim 43, wherein the multi-antenna signal processor is further configured to operate in parallel with the baseband processor circuit.

62. (Previously Presented) The communication system according to claim 43, wherein the baseband processor circuit is configured to handle data transmissions in the first operating mode using a single antenna.